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ABSTRACT

A project was conducted to develop and test three criterion-referenced achievement tests for use in Oklahoma's Dietetic Support Personnel training program. The training program is a competency-based course of instruction that is designed to prepare food service and production workers for employment in Oklahoma's health care industry. Initial versions of the multiple-choice tests for food service workers, food service supervisors, and food production workers were developed by testing specialists from Oklahoma's department of vocational and technical education. The content validity of the tests was assessed using a committee-oriented approach that included feedback from the consulting dietitians and instructors involved in the program. The split-halves method was used to determine the tests' reliability. Finally, their validity was tested through a process that involved distributing samples of the three tests to workers and supervisors in the three occupational areas covered in the tests. (This report includes detailed data about the methods used to assess the tests' reliability and validity, tabulations detailing the results of the assessments, and the instrument that supervisors used to rate their test-taking employees on each occupational duty appearing on the achievement tests.) (MN)

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DIETETIC SUPPORT PERSONNEL ACHIEVEMENT TEST

PRODUCT DEVELOPMENT REPORT

State Department of Vocational and Technical Education

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A Product Development Report: Three Dietetic Support Personnel Achievement Tests

Richard Todd Zdorkowski

November 1985
Research Coordinating Unit
State Department of Vocational and Technical Education
1500 West Seventh Avenue, Stillwater, Oklahoma 74074

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December 1985
The Oklahoma State Department of Vocational and Technical Education
1500 West Seventh Avenue, Stillwater, Oklahoma 74074

ABSTRACT

This report describes the development and testing of three Dietetic Support Personnel Achievement Tests and contains references to the final tests themselves. These tests were developed and published by the Evaluation and Testing Unit of Oklahoma State Department of Vocational and Technical Education. The developmental process addressed the needs of the Dietetic Support Program, the need for content validity, reliability, and criterion-related validity, and the dietetic support students' needs. The results of a field test period were incorporated in a final round of the test item editing and rewriting, and the completed tests were distributed to Oklahoma's Dietetic Support Personnel instructors and their short-term adult training administrators during November of 1985.

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INTRODUCTION

The Coordinator of Oklahoma's Dietetic Support Personnel training program requested that the State Department's Evaluation and Testing Unit produce competency achievement tests for the classes in her program, specifically:

1. To produce cognitive tests with an acceptable degree of content validity (with respect to the Dietetic Support Personnel curriculum),

2. To produce cognitive tests with an acceptable degree of reliability and criterion-related validity, and,

3. To produce cognitive tests whose contents were accessible to adult students with underdeveloped reading skills.

These three objectives were met in October of 1985, and the tests were then distributed to Oklahoma Dietetic Support Personnel instructors and their short-term adult training administrators.

THE PROCESS

The Dietetic Support Personnel program's competency tests were conditioned by three things: (1) the structure of the training program and its administrator's needs; (2) the methodology used to assess and ensure test reliability and validity; and (3) the students' needs. Each of these effected the test development process in different ways, and each is discussed separately in the paragraphs that follow.

The Program

The Dietetic Support Personnel training program is a competency-based course of instruction which is designed to serve Oklahoma's health care industry. It is administered through the State Department's Business and Industry Services Unit. The first class in its three-class course of instruction is the Food Service Worker class. This prepares students for such entry-level positions as dietary aide, dishwasher, cafeteria worker, or trayline worker. The class has no entry requirements but demands 30 hours of classroom training and 50 hours of clinical practice outside of the classroom (normally completed at the student's place of employment under the supervision of a Registered Dietian).

The second class in the Dietetic Support program is the Food Production Worker class. This class prepares students for employment as cook's helper, baker's helper, salad cook, and/or entry-level cook. These jobs are more complex and require greater responsibility than those targeted by the Food Service Worker class. However, they require much the same familiarity with basic nutrition, sanitation, personal hygiene, ware care, housekeeping, pest control, and the prevention of food-borne illness. As a result, the Food Production Worker class carries stricter requirements. It

requires the successful completion of the Food Service Worker class as well as 48 hours of classroom instruction and 80 hours of supervised clinical practice.

The last class in the Dietetic Support ladder is the Food Service Supervisor class. This class qualifies graduates to serve as dietetic services supervisors in nursing homes and smaller hospitals, or as area supervisors in larger health care facilities' dietary departments. The demands that these jobs make upon graduates are such that this class requires much more of its students than either of the other classes. Students must have a high school diploma or G.E.D. to enter the Food Service Supervisor class and must also complete the Food Service Worker and the Food Production Worker classes successfully (or must test out of them through challenge exams). Once admitted into the class, a student must complete 90 hours of classroom training and 150 hours of supervised clinical practice.

The hierarchical structure of the Dietetic Support program, and its challenge exam program, led the program coordinator to request that her tests be valid with respect to the program's curriculum. This request simplified the test development process somewhat because it defined the strategy used to assure the tests' content validity.

The basic question that is asked when one attempts to assure a test's content validity is: Does the mix of items on this test constitute a representative sample from the universe of potential test items? Since the Dietetic Support program's coordinator had already defined the universe of potential items for us (i.e., her occupationally-oriented curriculum), our job became one of drawing items from that "universe."

The methods used to assure content validity are interesting because there are no widely accepted quantitative methods that do this. As a

result, test developers use professional experts and panels of experts in each stage of the item writing, item editing, and test compilation process. A Registered Dietitian was hired to write the initial test items for the Dietetic Support Personnel tests and was instructed to follow the duty/task analysis that had structured each class's curriculum. Afterwards, a committee of consulting dietitians and Dietetic Support Personnel instructors was called together to evaluate the battery of items that had been produced. After they edited the test item battery, they returned the edited items to the Evaluation and Testing Unit for further processing.

The State Department's testing specialists encountered an unexpected problem when the time came to construct the first sample tests. It was not clear how many test items should be placed in each duty/task area on the sample tests. The consulting dietitians and the Dietetic Support instructors emphasized the fact that the duties and tasks addressed in their curriculum were not of equal importance. They stressed the fact that some duties are much more important than the others for Food Service Workers and that a different hierarchy of importance exists for the Food Production Workers and the Food Service Supervisors.

In response to this, the Program's consulting dietitians and instructors were asked to rate the on-the-job importance and the on-the-job frequency of each duty listed on the Food Service Worker, Food Production Worker, and Food Service Supervisor tests. These ratings were then weighted, summed, and averaged to form a "criticality" index which dictated the relative importance of each duty area on each of the tests. These indices, in turn, were used to determine both the number of items within each duty area on the tests and the tests' recommended length.

Thus, the structure of the Dietetic Support Personnel training program and the needs of its coordinator shaped the development of that Program's

competency achievement tests. They defined the universe from which the test items were drawn, they defined the kind of professional expert who was needed to write test items, they defined the panel of experts needed to edit the test items, and they defined the method used to compile the first sample tests. Our concern with the content validity of the Dietetic Support test led to the development of a complex committee-oriented test development process, but that process does provide some evidence that the Dietetic Support Personnel tests reproduce the environments within which the Program's students are expected to perform.

Reliability and Validity

A good occupational competency test should do at least two things. It should provide consistent test scores over repeated trials, and it should measure occupational skills accurately. The first of these is referred to as reliability, and the second is called criterion-related or predictive validity. Since the reliability of a test must be established before its validity coefficients can be calculated, methods of reliability assessment were addressed first.

Reliability

The reliability of an occupational competency test may be assessed in a number of different ways. Cognitive test score data may be gathered from vocational students or entry-level workers using the test/retest method, the parallel forms method, or the split-halves method. The split-halves method was chosen to gather and analyze the test data on Oklahoma's Food Service Worker, Food Production Worker, and Food Service Supervisor tests. The split-halves test seemed the most appropriate because of the limited numbers of entry-level employees available for testing and because of the limited amount of time they had to contribute.

The professional literature on tests and measurements suggests that the reliability coefficients derived from split-halves tests may be influenced by the kind of "split" an analyst uses to separate a test's scores. To combat this possibility, the tests were split in the conventional way (by scoring the odd items and the even items separately) and were then split twice more (by scoring the odd and even pairs, and by scoring the odd and even triplets). This procedure allowed us to inspect the influence of splitting methods upon the reliability coefficients and to calculate a "balanced" reliability coefficient.

Once the workers' occupational test data were gathered and split, Pearson's Product-Moment Correlation Technique was used to measure the degree of agreement between the split-halves. This was then expressed as a reliability coefficient (see Appendix 1 for the correlation formula). Pearson's Product-Moment Correlation Technique is the standard statistical procedure used to calculate reliability coefficients, but it has at least one weakness. It underestimates the total degree of agreement between split-halves. As a result, researchers must "correct" their initial reliability coefficients by using one of the available correction formulae. Again, to combat the possibility that the final reliability indices might be over-influenced by the choice among correction formulae, two different correction formulae were employed. The first was the conventional choice, the Spearman-Brown correction, and the second was the Guttman correction formula (see Appendix 2). Once these were calculated for each split-halves test, they were inspected, the three split-halves test results were averaged, and the reliability assessment of the State Department's Occupational Competency Tests was completed (see Figure 1 for a diagram of the analysis). A computer program was written to automate these calculations, the program was stored in the State Department's computer files, and it is in more or less continuous use at present.

The reliability coefficients of the Food Service Worker (FSW), the Food Production Worker (FPW), and the Food Service Supervisor (FSS) are presented in Table 1.

Table 1. Reliability Coefficients for Three Dietetic Support Personnel Achievement Tests*

Test	Average** Uncorrected	Average of Spearman/Brown	Average of Guttman
Food Service Worker	.7853	.8851	.8828
Food Production Worker	.9167	.9582	.9705
Food Service Supervisor	.7745	.8727	.9000

*Calculated using Pearson's Product-Moment Correlation
**The Average of the Three Split-Halves Tests

As you can see from the number of coefficients in the neighborhood of .90, the tests are quite reliable. Tests with corrected reliability under .80 are generally considered to need revision, but all of the State Department's sample occupational tests performed more consistently than that. This indicated to us that the State Department's test development process was producing reliable tests.

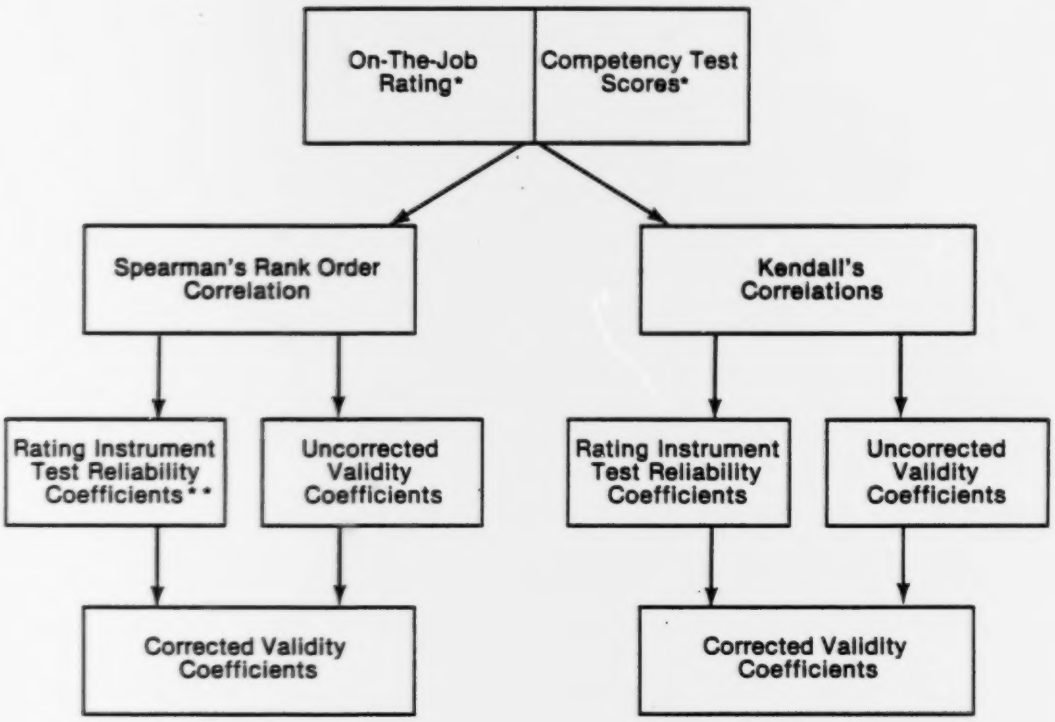
Validity

Criterion-related validity may be the most important attribute possessed by an occupational competency test. Validity coefficients reveal how accurately an occupational test score measures occupational skills. Higher coefficients suggest a closer correspondence between test scores and on-the-job performance criteria while lower scores, of course, suggest less accuracy. In order to investigate the State Department of Vocational and Technical Education's competency tests, occupational exams were distributed

to workplace samples of Food Service Workers, Food Production Workers, and Food Service Supervisors. Criterion-rating forms were also distributed to each test-taker's supervisor. These asked the supervisors to rate their employees' work quality, productivity, and on-the-job effectiveness. They also asked the supervisors to rate their test-taking employees on each occupational duty that appeared in the State Department's written test. (An example is shown in Appendix 3.)

Once this information was gathered from the workplace, it was correlated with the workers' test scores. Both Spearman's Rank-Order Correlation and Kendall's Correlation methods were used and their coefficients compared, once again, in the effort to minimize the impact any single analytic technique might have upon the validity coefficients. The validity coefficients produced by these techniques were then "corrected" using the generally accepted validity formula (see Appendix 4). The total research design can be seen in Figure 2. A computer program was written to automate this process. The program was then stored in the State Department's computer files, where it is more or less in continuous use at present.

Figure 2. The Validity Assessment Process



*Since reliability indices for the competency tests and the criterion rating forms are needed to correct the validity coefficients, both were split in the ways described previously.

**The reliability assessment described earlier was performed here, resulting in the production of corrected reliability coefficients for both the competency tests and the criterion rating forms.

The validity coefficients of the Food Service Worker, Food Production Worker, and the Food Service Supervisor tests are presented in Table 2. As you can see from the coefficients, it is much more difficult to construct a valid test than it is to construct a reliable one. A validity coefficient in the neighborhood of .50 is considered acceptable by most experts because there are so many sources of variation that influence both a worker's pencil-and-paper test results and a supervisor's on-the-job performance ratings. Even under these extremely variable conditions, the State Department's sample tests proved reasonably valid. The Food Service Worker and Food Service Supervisor tests each displayed several acceptable test score/criterion rating relationships. The Food Production Worker test also displayed one. These suggested that the State Department's test development process produced cognitive tests that were correlated with a worker's on-the-job assessments, but it also suggested that more care must be taken to minimize the sources of test-score/criterion-rating variation that arise within the development process itself.

Table 2. The Validity Coefficients for Three Dietetic Support Personnel Achievement Tests

	Criterion	Kendall's Correlation Uncorrected	Kendall's Correlation Corrected	Spearman's Correlation Uncorrected	Spearman's Correlation Corrected
Food Service Worker	Quality	.5375	.6697	.6346	.3559
	Productivity	.5719	.7125	.6986	.7878
	Effectiveness	.5715	.7126	.7000	.7844
	Total Rate	.4869	.6067	.6550	.7339
Food Production Worker	Quality	*	*	*	*
	Productivity	*	*	*	*
	Effectiveness	*	*	*	*
	Total Rate	.3333	.4145	.4263	.5219
Food Service Supervisor	Quality	.3256	.4739	.4119	.5288
	Productivity	.3907	.5334	.4901	.6292
	Effectiveness	.3112	.4567	.3957	.5080
	Total Rate	*	*	*	*

*Significance Levels Unacceptable

Secondary Analyses

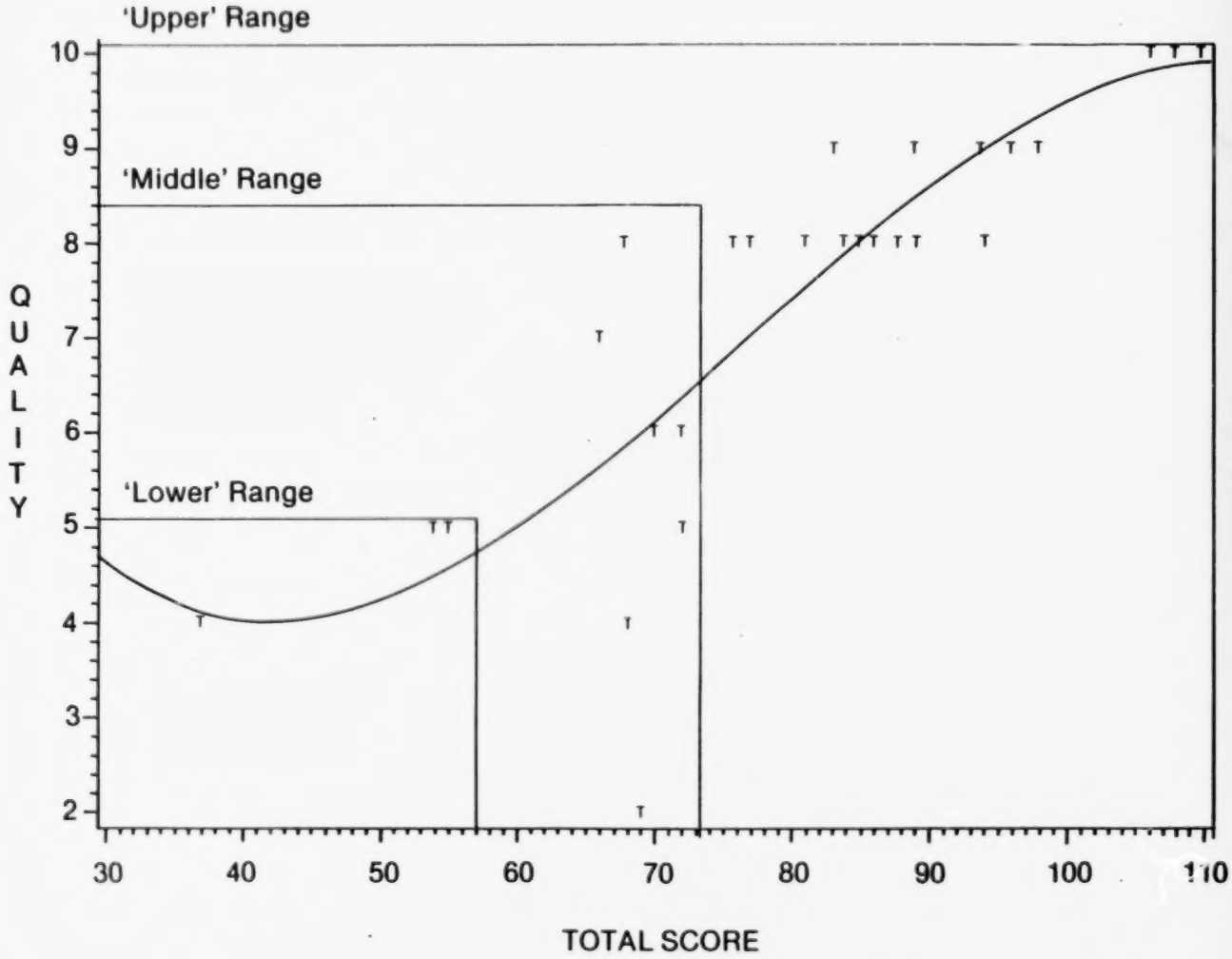
Several other forms of statistical analysis were undertaken to identify weaknesses in the test development process. In one, the students' total scores were correlated against their individual duty scores (see Table 3). This analysis shows how each duty performs with respect to its parent test, and it revealed that several duties were not sufficiently correlated with student test scores. These duty areas were closely examined and field tests were undertaken to reweigh them.

The criterion ratings and the total test scores were also graphed and a cubic regression line, a "best-fit" line, was plotted through them to provide a visual trace of their relationship (see Figures 3, 4, and 5). As you can see from the graphs, the relationships between test scores and criterion ratings are complex. There is a test score between 50 and 60 beneath which employers' ratings no longer decline, while there is also a test score between 100 and 110 above which they no longer increase. The s-shaped relationship visible on these graphs is further complicated by the fact that there is a test score between 70 and 80 that generates a very wide range of employers' ratings. Our conclusion is that there exists a test score around 75, above which workers or students are more likely to enjoy consistently "high" employers' assessments. This in turn, suggests that the State Department may be able to use similar graphs to set industrial test score standards for its other cognitive tests. It allowed us to assess the consistency and the accuracy of the tests, and it provided us with rather detailed information about the tests' performance under field conditions.

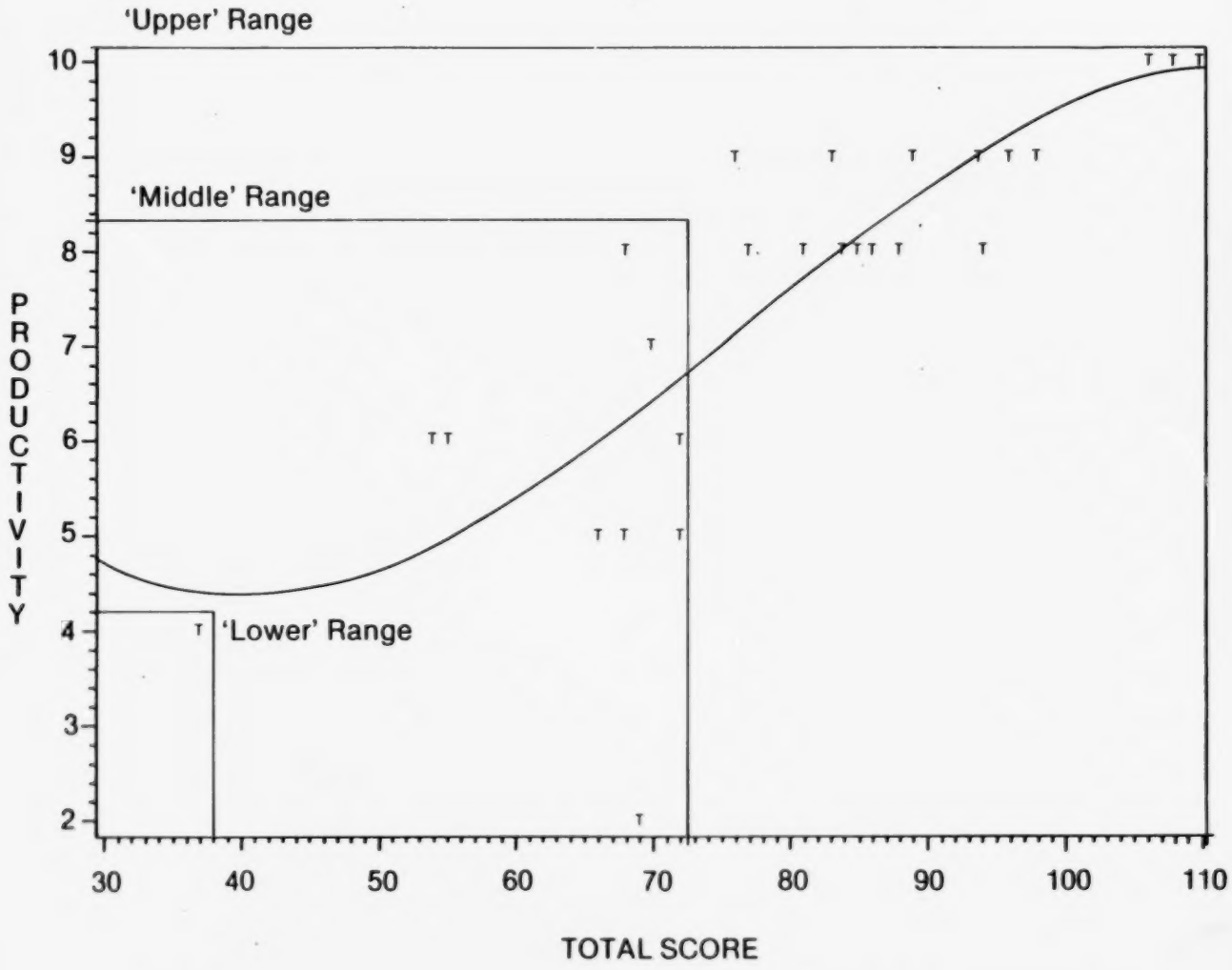
Table 3. Sample Within-Test Correlations

Duty	FSW Score	FPW Score	FSS Score
TD1	.7082	.7854	.5718
TD2	.7467	.7184	.5000
TD3	.0764	.4905	.2791
TD4	.8410	.4919	.2470
TD5	.8166	.7446	.5518
TD6	.8337	.3644	.5369
TD7	.8021	.8786	.8945
TD8	.7200	.4478	.6186
TD9	-	.7487	.5273
TD10	-	-	.4775

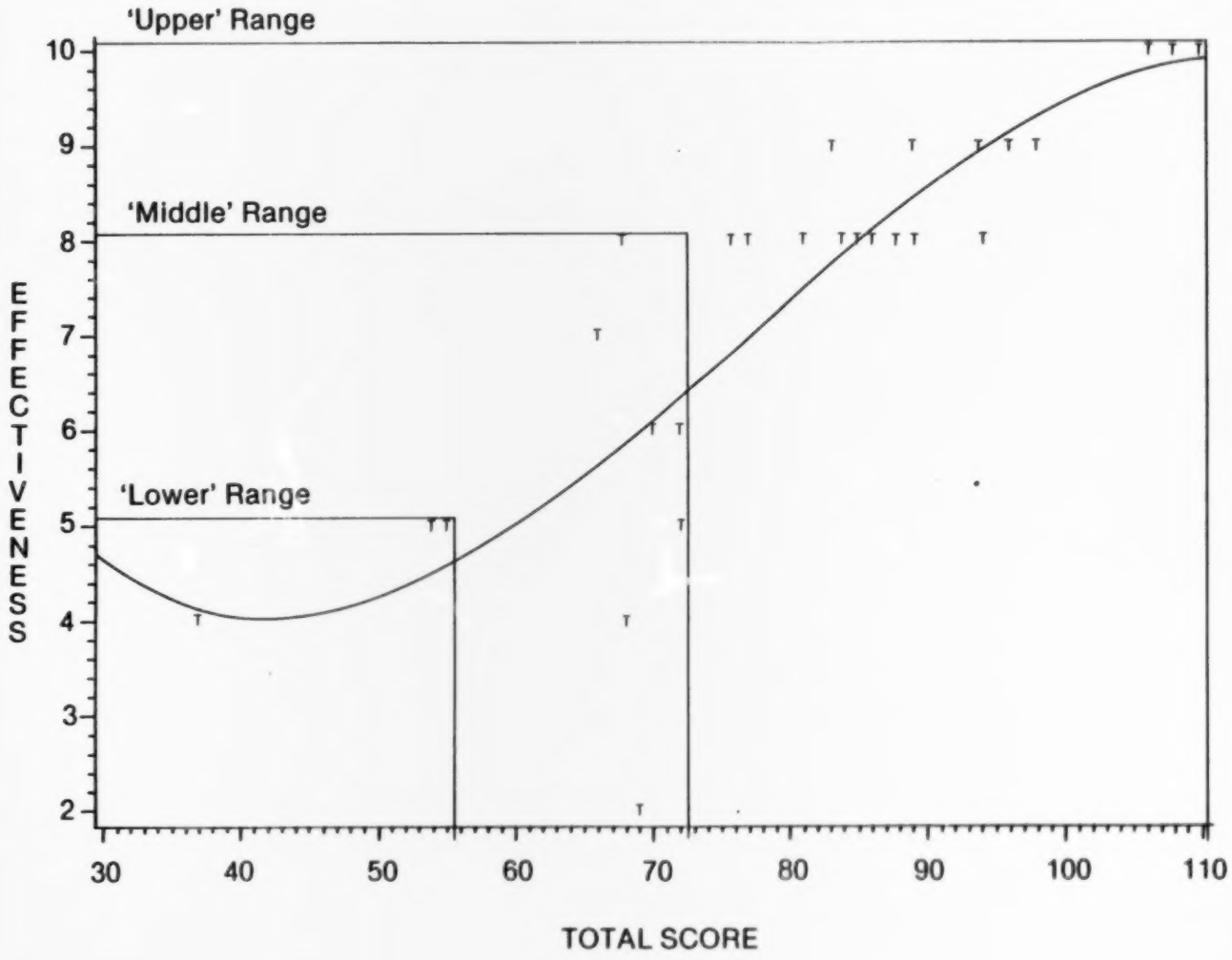
Preliminary Food Production Worker Validity Test



Preliminary Food Production Worker Validity Test



Preliminary Food Production Worker Validity Test



The Student's Needs

While the structure of the Dietetic Support Personnel program determined our approach to content validity and the technical aspects of reliability and criterion-related validity assessment determined our approach to the calibration of the test, the students' needs and perceptions determined the final form of the tests. The supervisors and consulting dietitians of the workers who participated in the testing program were asked to identify the test items they thought were poorly worded, poorly or confusingly formulated, and otherwise inappropriate for their occupational tests. The items that they identified were then examined very closely. Testing specialists also performed an item discrimination analysis on the Food Service Worker and the Food Production Worker items. Table 4 contains the list of both the user-identified and analytically-identified problem-items.

Table 4. User-Identified Problems

	Test Item Numbers
Food Service Worker	3, 5, 11, 13, 16, 17, 20, 21, 22, 23, 24, 25, 34, 40, 41, 42, 43, 44, 45, 50, 51, 52, 62, 63, 64, 66, 68, 70, 71, 74, 75, 77, 80, 85, 87, 88, 92, 93, 94, 96, 98, 99, 104, 106, 107, 108, 111, 113, 114, 117, 121, 123, 124, 127, 135, 136, 141, 142, 143, 147, 148.
Food Production Worker	3, 6, 12, 14, 15, 16, 17, 18, 19, 20, 26, 29, 31, 36, 37, 40, 41, 42, 43, 44, 45, 50, 51, 53, 55, 56, 57, 59, 60, 61, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 85, 87, 91, 93, 94, 96, 97, 98, 100, 101, 103, 104, 105, 106, 107, 108, 109, 110, 111, 113, 114, 115, 116, 118, 119, 121, 122, 123, 125, 127, 128, 129, 130, 134, 136, 136, 139, 140, 141, 143, 148, 149.
Food Service Supervisor	2, 7, 9, 10, 14, 15, 16, 28, 32, 33, 37, 38, 39, 41, 47, 52, 53, 54, 57, 58, 61, 62, 64, 65, 66, 67, 69, 70, 71, 74, 75, 77, 78, 80, 91, 92, 97, 107, 111, 112, 113, 118, 119, 122, 125, 126, 129, 131, 133, 134, 136, 138, 139, 140.

Table 4. User-Identified Problems

	Test Item Numbers
Food Service Worker	3, 5, 11, 13, 16, 17, 20, 21, 22, 23, 24, 25, 34, 40, 41, 42, 43, 44, 45, 50, 51, 52, 62, 63, 64, 66, 68, 70, 71, 74, 75, 77, 80, 85, 87, 88, 92, 93, 94, 96, 98, 99, 104, 106, 107, 108, 111, 113, 114, 117, 121, 123, 124, 127, 135, 136, 141, 142, 143, 147, 148.
Food Production Worker	3, 6, 12, 14, 15, 16, 17, 18, 19, 20, 26, 29, 31, 36, 37, 40, 41, 42, 43, 44, 45, 50, 51, 53, 55, 56, 57, 59, 60, 61, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 85, 87, 91, 93, 94, 96, 97, 98, 100, 101, 103, 104, 105, 106, 107, 108, 109, 110, 111, 113, 114, 115, 116, 118, 119, 121, 122, 123, 125, 127, 128, 129, 130, 134, 136, 136, 139, 140, 141, 143, 148, 149.
Food Service Supervisor	2, 7, 9, 10, 14, 15, 16, 28, 32, 33, 37, 38, 39, 41, 47, 52, 53, 54, 57, 58, 61, 62, 64, 65, 66, 67, 69, 70, 71, 74, 75, 77, 78, 80, 91, 92, 97, 107, 111, 112, 113, 118, 119, 122, 125, 126, 129, 131, 133, 134, 136, 138, 139, 140.

'Many of these problem-items were negatively worded, many contained lists that asked for the most or the least appropriate response, and many contained language or terminology that is not common usage in Dietetic Support workplaces. Unexpectedly, the variety of equipment in Oklahoma's Dietetic support workplaces meant that the test items we expected to cause the least difficulty (those mentioning specific equipment) often drew severe criticism. Pleasantly, very few of the user criticisms were aimed at items damaged by clerical or staff errors.

The list of user-identified problems was taken to the members of the Dietetic Support Personnel Advisory Committee, and that group appointed a subcommittee to serve as the final editors for the tests. This group reviewed the identified items and their suggestions were incorporated into the tests. Afterwards, the final editors' suggestions were generalized,

and their general suggestions were incorporated into the test items as well. This meant, for the most part, that test items were written in a more "conversational" style and that the items' competing alternatives were more widely "separated" (both concessions to the users' poorly-developed reading and test taking skills). The final tests were circulated through the sub-committee one last time, and then they were delivered to the Dietetic Support Personnel Coordinator for distribution to her instructors and their short-term adult training administrators.

THE PRODUCTS

Three test battery booklets were developed for the Dietetic Support Personnel training program: a Food Service Worker battery, a Food Production Worker battery, and a Food Service Supervisor battery. These were published by the Oklahoma State Department of Vocational and Technical Education in Stillwater, Oklahoma, during November of 1985. They are also on file at the National Center for Research in Vocational Education and in the ERIC system. Each test battery booklet is organized into the duty areas prescribed by the Dietetic Support curriculum, and the format of the booklets reflects our policy of putting the tests into the hands of their users, i.e., local teachers and administrators.

Each duty area in a test battery booklet contains more test items than an instructor can possibly use for a single test. As a result, the first part of each booklet explains, step-by-step, the process that an instructor or short-term administrator should follow when constructing a competency test. The first step, of course, is to identify the purpose of the test and to list the duty areas that are to be covered. The second is to determine the length of the test and the amount of time needed for it. The third step, then, involves some calculation. It asks the test maker to calculate the number of items to be used on each duty area, and it provides a number of alternative methods for drawing test items out of the battery.

These instructions are broken down far enough that busy Dietetic Support instructors, short-term adult training administrators, or their clerical staffs can produce an extremely large number of different tests from the test batteries with very little difficulty. This is important because many local teachers and administrators have many demands for their time. The fact that the batteries "contain" many tests overcomes some of

the test-security problems that other standardized tests encounter. It also allows instructors to tailor their tests to their localized needs.

The test battery booklets also contain two other test administration aids. The booklets contain a sample Test Result Report Form and a description of the procedure that Dietetic Support staff may use to update test items. The report form standardizes the method instructors use to report test scores, and it simplifies the process of student counseling and assessment considerably. It has also allowed the Dietetic Support Program coordinator to standardize the challenge exam's cut-off scores across the state. The item update is important as well. It provides the instructors with a formal method of modifying dated or obsolete test items, and it focuses their attention upon the continuing problems of student evaluation and program accountability.

Conclusions

This report describes the development and testing of three Dietetic Support Personnel Achievement tests. The development of the tests was conditioned by the structure of the Dietetic Support Personnel training program, the technical nature of reliability and validity assessment, and by students' needs. The tests were delivered to the Coordinator of the Dietetic Support Personnel training program in November of 1985, and she distributed them throughout the state that month. We feel that the tests meet the program's specific needs, that they are reliable and valid with respect to the program's training criteria, and that they are calibrated to the students' reading levels. As a result, we also feel that the Food Service Worker, Food Production Worker, and Food Service Supervisor test batteries will provide Dietetic Support Personnel instructors with useful diagnostic instruments.

Appendix 1. The Pearson Product-Moment Correlation

$$r_{AB} = \frac{\frac{\Sigma(X_A)\ (X_B) - (\bar{X}_A)\ (\bar{X}_B)}{N}}{(S_A)\ (S_B)}$$

Where:

r_{AB}	=	the correlation between test form A and test form B (an uncorrected reliability coefficient)
X_A	=	the sum of the test scores for test form A
X_B	=	the sum of the test scores for test form B
N	=	the number of students taking test forms A and B
$\bar{X}_A, \bar{X}_B$	=	the mean test scores for test forms A and B
S_A, S_B	=	the standard deviations for test forms A and B

Appendix 2. The Spearman-Brown Correction Formula

$$r_{SB} = \frac{2 r_{SB}}{1 - r_{AB}}$$

Where: r_{SB} = the corrected reliability coefficient

r_{AB} = the correlation between test forms A and B

The Guttman Correction Formula

$$r_G = 2 \left[1 - \frac{S_O^2 + S_E^2}{S_T^2} \right]$$

Where: r_G = the corrected reliability coefficient

S_O = the standard deviation of the odd form of the test

S_E = the standard deviation of the even form of the test

S_T = the standard deviation of the unsplit test

Appendix 3

OKLAHOMA OCCUPATIONAL ACHIEVEMENT TEST
FOOD SERVICE SUPERVISOR
EMPLOYEE RATINGS

Instructions: Each question below is concerned with one aspect of a Food Service Supervisor's job. Circle the number, on the scale below, which indicates your evaluation of _____'s job performance.

1. Food service supervisors must communicate clearly with their administrators, with registered dietitians, with food production workers, with food service workers, and with their patients. This food service supervisor's communications:

Need Improvement									Are Superior
1	2	3	4	5	6	7	8	9	10

2. A food service supervisor must plan and supervise other people's work. This supervisor's managerial ability:

Needs Improvement									Is Superior
1	2	3	4	5	6	7	8	9	10

3. A food service supervisor must understand basic nutrition. This supervisor's knowledge of nutrition:

Needs Improvement									Is Superior
1	2	3	4	5	6	7	8	9	10

4. A food service supervisor must know and follow the established nutritional guidelines. This supervisor's knowledge of the established guidelines:

Needs Improvement									Is Superior
1	2	3	4	5	6	7	8	9	10

5. A food service supervisor must understand the basic physiology of human food digestion and food absorption. This supervisor's knowledge of food digestion and absorption:

Needs Improvement									Is Superior
1	2	3	4	5	6	7	8	9	10

6. A food service supervisor must understand the reasons for and the practice of diet therapy. This supervisor's knowledge of diet therapy:

Needs Improvement									Is Superior
1	2	3	4	5	6	7	8	9	10

7. A food service supervisor must monitor her/his patients' eating habits and specify the kind of dietary records that must be kept for them. This supervisor's observation and documentation of patients' eating habits:

Need Improvement — Are Superior
1 2 3 4 5 6 7 8 9 10

8. A food service supervisor must maintain high standards of food production and service. This supervisor's food production and service:

Need Improvement — Are Superior
1 2 3 4 5 6 7 8 9 10

9. A food service supervisor must exercise strict cost and inventory controls. This supervisor's cost and inventory controls:

Need Improvement — Are Superior
1 2 3 4 5 6 7 8 9 10

10. A food service supervisor must oversee the care and use of a kitchen and all of its equipment. This supervisor's management of her/his equipment:

Needs Improvement — Is Superior
1 2 3 4 5 6 7 8 9 10

11. A food service supervisor must direct the work of food production workers and food service workers. This supervisor's management of her/his personnel:

Needs Improvement — Is Superior
1 2 3 4 5 6 7 8 9 10

Instructions: The following questions are concerned with your employee's overall job performance. Circle the number, on the scale below, which indicates your evaluation of his/her job performance.

12. Food service supervisors must meet very high job standards. The quality of this employee's work:

Needs Improvement — Is Superior
1 2 3 4 5 6 7 8 9 10

13. Food service supervisors must be productive. This employee:

Needs Improvement — Is Superior
1 2 3 4 5 6 7 8 9 10

14. Food service supervisors must meet high job standards and perform their work within acceptable time limits; they must perform their jobs effectively. This employee:

Needs Improvement — Is Superior
1 2 3 4 5 6 7 8 9 10

Appendix 4. Validity Formula

$$V_{T.C.} = \frac{r_{T.C.}}{\sqrt{r_{T.T.} \times r_{C.C.}}}$$

Where:

$V_{T.C.}$ = the corrected validity coefficient, the modified correlation between test score T and criterion rating C

$r_{T.C.}$ = the uncorrected validity coefficient, the unmodified correlation between test score T and criterion rating C

$T.T.$ = the reliability of the test, the corrected split-halves reliability coefficient of test T

$r_{C.C.}$ = the reliability of criterion rating form C, the corrected split-halves reliability coefficient of rating form